

AMENDMENTS TO THE CLAIMS

In the set of claims within the Application, please amend and retain each claim as hereinafter indicated.

1. (Currently Amended) A simulation system for simulating [[an]] operation of an automotive vehicle, said simulation system comprising:

an input device for providing vehicle information and path information;

a controller coupled to said input device having and operable to simulate said automotive vehicle using a vehicle computer model ~~therein~~, wherein said controller is programmed to

determine a rear side slip angle of [[a]] said vehicle computer model;

determine an initial steering wheel angle that is input to [[the]] said vehicle computer model;

when [[the]] said rear side slip angle is determined to be greater than a predetermined threshold, determine a look ahead scale factor~~[[,]]~~ ~~when the rear side slip angle is greater than the threshold[[,]]~~ and increase the distance of a look ahead point substantially on or near an intended vehicle path as a function of [[the]] said look ahead scale factor;

determine a ~~first~~ new steering wheel angle, which is input to [[the]] said vehicle computer model at a time later than [[the]] said initial steering wheel angle, ~~input~~ by comparing said intended vehicle path with [[the]] said look ahead point ~~and the~~ on or near said intended vehicle path;

operate [[the]] said vehicle computer model with [[the]] said initial steering wheel angle ~~input~~ or said new steering wheel angle; and

generate an output in response to [[the]] said vehicle computer model and [[the]] said initial steering wheel angle ~~input~~ or first said new steering wheel angle ~~input~~.

2. (Currently Amended) A simulation system as recited in claim 1, wherein [[the]] said predetermined threshold is about 15 degrees.

3. (Currently Amended) A simulation system as recited in claim 1, wherein said controller is programmed to determine both a longitudinal vehicle velocity and a lateral vehicle velocity and ~~determining the~~ also determine said rear side slip angle as a function of [[the]] said longitudinal vehicle velocity and [[the]] said lateral vehicle velocity.

4. (Currently Amended) A simulation system as recited in claim 1, wherein said controller is programmed to determine ~~[[a]]~~ said look ahead scale factor as a function of ~~[[the]]~~ said rear side slip angle.

5. (Currently Amended) A simulation system as recited in claim 1, wherein said controller is programmed to determine ~~[[a]]~~ said look ahead scale factor as a function of an exponential of ~~[[the]]~~ said rear side slip angle.

6. (Currently Amended) A simulation system as recited in claim 1, wherein said controller is programmed to determine ~~[[a]]~~ said look ahead scale factor as a function of an exponential of a product of ~~[[the]]~~ said rear side slip angle and a constant.

7. (Currently Amended) A simulation system as recited in claim 6, wherein ~~[[the]]~~ said constant is about ~~[[.02]]~~ 0.02.

8. (Currently Amended) A simulation system as recited in claim 1, wherein ~~[[.]]~~ when ~~[[the]]~~ said rear side slip angle is determined to not be greater than ~~[[the]]~~ said predetermined threshold, ~~[[the]]~~ said controller is alternatively programmed to determine an unscaled look ahead factor.

9. (Currently Amended) A simulation system as recited in claim 1, wherein ~~[[the]]~~ said controller is programmed to determine ~~[[a]]~~ said new steering wheel angle ~~input~~ when ~~[[the]]~~ said vehicle computer model is determined to not be headed on target, and said target is associated with said intended vehicle path.

10. (Currently Amended) A method of operating a vehicle computer model having vehicle information and path information therein, ~~[[the]]~~ said method ~~operating~~ being operable on a digital computer system and comprising the steps of:

- (a) determining a rear side slip angle of ~~[[a]]~~ said vehicle computer model;
- (b) determining an initial steering wheel angle that is input to said vehicle computer model;
- (c) when ~~[[the]]~~ said rear side slip angle is determined to be greater than a predetermined threshold, determining a look ahead scale factor~~[[;]]~~ ~~when the rear side slip angle~~

~~is greater than the threshold~~[[,]] and increasing the distance of a look ahead point substantially on or near an intended vehicle path as a function of [[the]] said look ahead scale factor;

(d) determining a first new steering wheel angle, which is input to [[the]] said vehicle computer model at a time later than [[the]] said initial steering wheel angle, ~~input~~ by comparing said intended vehicle path with [[the]] said look ahead point ~~and the on or near said intended vehicle path~~;

(e) operating [[the]] said vehicle computer model with [[the]] said initial steering wheel angle or first said new steering wheel angle ~~input~~; and

(f) ~~outputting results of the operating step~~ generating an output in response to said vehicle computer model and said initial steering wheel angle or said new steering wheel angle.

11. (Currently Amended) A method as recited in claim 10, wherein [[the]] said predetermined threshold is about 15 degrees.

12. (Currently Amended) A method as recited in claim 10, wherein ~~determining a rear side slip angle comprises~~ step (a) is at least partially accomplished by determining both a longitudinal vehicle velocity and a lateral vehicle velocity and also determining [[the]] said rear side slip angle as a function of [[the]] said longitudinal vehicle velocity and [[the]] said lateral vehicle velocity.

13. (Currently Amended) A method as recited in claim 10, wherein ~~determining a said look ahead scale factor comprises determining a look ahead factor~~ is determined as a function of [[the]] said rear side slip angle.

14. (Currently Amended) A method as recited in claim 10, wherein ~~determining a said look ahead scale factor comprises determining a look ahead factor~~ is determined as a function of an exponential of [[the]] said rear side slip angle.

15. (Currently Amended) A method as recited in claim 10, wherein ~~determining a said look ahead scale factor comprises determining a look ahead factor~~ is determined as a function of an exponential of a product of [[the]] said rear side slip angle and a constant.

16. (Currently Amended) A method as recited in claim 15, wherein [[the]] said constant is about [[.02]] 0.02.

17. (Currently Amended) A method as recited in claim 10, said method further comprising ~~[[,]]~~ the step of when ~~[[the]]~~ said rear side slip angle is determined to not be greater than ~~[[the]]~~ said predetermined threshold, alternatively determining an unscaled look ahead factor.

18. (Currently Amended) A method as recited in claim 10, said method further comprising ~~performing~~ the step of determining ~~[[a]]~~ said new steering wheel angle input when ~~[[the]]~~ said vehicle computer model is determined to not be headed on target, said target being associated with said intended vehicle path.

19. (Currently Amended) A method of operating a vehicle computer model having vehicle information and path information therein, said method comprising the steps of:

determining a rear side slip angle of ~~[[a]]~~ said vehicle computer model;

determining an initial steering wheel angle that is input to said vehicle computer model;

determining a look ahead point that is substantially on or near an intended vehicle path for said vehicle computer model;

when ~~[[the]]~~ said rear side slip angle is determined to be greater than a predetermined threshold, determining a look ahead scale factor~~[[,]]~~ ~~when the rear side slip angle is greater than the threshold[[,]]~~ and increasing the distance of said look ahead point as a function of ~~[[the]]~~ said look ahead scale factor;

when ~~[[the]]~~ said rear side slip angle is alternatively determined to be less than ~~[[the]]~~ said predetermined threshold, maintaining the distance of said look ahead point;

when ~~[[the]]~~ said vehicle computer model is determined to be headed off a predetermined target, determining a new steering wheel angle, which is input to ~~[[the]]~~ said vehicle computer model, ~~as a function of an error between~~ by comparing said intended vehicle path with ~~[[the]]~~ said look ahead point ~~and the~~ on or near said intended vehicle path;

operating ~~[[the]]~~ said vehicle computer model with ~~[[the]]~~ said initial steering wheel angle or said new steering wheel angle input; and

~~outputting the results of the operating step~~ generating an output in response to said vehicle computer model and said initial steering wheel angle or said new steering wheel angle.

20. (Currently Amended) A method as recited in claim 19, wherein ~~determining a~~ said look ahead scale factor ~~comprises determining a look ahead factor~~ is determined as a function of an exponential of ~~[[the]]~~ said rear side slip angle.